



DEPARTMENT OF THE NAVY  
OFFICE OF THE CHIEF OF NAVAL OPERATIONS  
WASHINGTON, DC 20350-2000

IN REPLY REFER TO  
OPNAVINST 8023.21C  
Op-411F4  
6 Jan 86

OPNAV INSTRUCTION 8023.21C

From: Chief of Naval Operations

Subj: EXPLOSIVES SAFETY STANDARDS FOR U.S. NAVY COMBATANT (R)  
SHIPS AND TENDERS AT U.S. NAVAL STATIONS AND SIMILAR  
SUPPORT ACTIVITIES

Ref: (a) DOD Directive 6055.9 of 25 Nov 1983 (NOTAL)  
(b) DOD 6055.9-STD of 31 Jul 1984 (NOTAL) (A)  
(c) NAVSEA Ordnance Pamphlet 5, Vol. 1, Fourth Revision (NOTAL)  
(d) NAVSEA Ordnance Pamphlet 4, Fifth Revision (NOTAL)  
(e) OPNAVINST 8023.13F (NOTAL)  
(f) OPNAVINST 8023.2B (NOTAL)  
(g) OPNAVINST 8023.23 (NOTAL)

Encl: (1) Explosives Safety Standards (R)

1. Purpose. To promulgate subject standards contained in enclosure (1), in accordance with reference (a), for those situations unique to Navy operations which are not covered in reference (b). This revision removes the term "interim" from these standards and expands the applicability of these standards to cover all explosives and ordnance items. (A)

2. Cancellation. OPNAVINST 8023.21B.

3. Applicability. These explosives safety standards are applicable to U.S. Navy ships (except AE, AOE, AOR, and AO-51 class ships) which are berthed at Navy shore stations and support facilities where any ordnance is handled or transferred to the ships. These standards are also applicable to these shore facilities, on a world-wide basis. (R)

4. Discussion. The basic Department of Defense (DOD) explosives safety standards of reference (b) applicable to Department of the Navy components ashore have been included in reference (c); those applicable to ships are included in reference (d). Reference (a) requires the Secretaries of the Military Departments (or their designees) to set safety standards for the manufacture, storage, and handling of ammunition and explosives pending the establishment of DOD-wide standards. The safety standards contained in enclosure (1) are issued to meet this provision and provide increased explosives safety for the specified locations and ships. (R)


5. Action

a. All appropriate Department of the Navy commands will revise their explosives safety instructions and directives to conform with the contents of this instruction within 120 days of the date of this instruction.

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b. Naval Base Commanders and other commanders involved in the conduct of area coordination and command inspections will ensure that these explosives safety policies and procedures are included in command inspections, and that local ammunition handling practices and explosives safety waivers based on these policies are reviewed by area Ammunition and Hazardous Materials (AMHAZ) Handling Review Boards and Sub-boards, in accordance with reference (e).

c. Guidance and procedures contained in enclosure (1) will be examined during explosives safety surveys conducted in accordance with references (f) and (g).

  
**T. J. HUGHES**  
 Deputy Chief of Naval  
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EXPLOSIVES SAFETY STANDARDS

(R)

Ref: (a) NAVSEA Ordnance Pamphlet 5, Vol. 1, Fourth Revision (NOTAL)  
(b) NAVSEA Ordnance Pamphlet 4, Fifth Revision (NOTAL)  
(c) OPNAVINST 8023.2B (NOTAL)  
(d) NAVSEA Ordnance Pamphlet 5, Vol. 2, Fourth Revision (NOTAL)  
(e) OPNAVINST 8023.20E (NOTAL)  
(f) OPNAVINST C3500.29C (NOTAL)

Appendix: A -- Ammunition Handling Flow Chart (Simultaneous Operations)  
B -- ESQD and Tender Separation Requirements  
C -- Summary of ESQD Requirements

1. Scope and Application

a. This enclosure establishes the explosives safety quantity distance (ESQD) and other explosives safety standards for the handling of limited quantities of ordnance between U.S. Naval Stations or similar support activities and U.S. Navy ships and over-the-side ordnance handling between ships located at these facilities. These standards apply on a world-wide basis to the above facilities and to ships berthed at them. See paragraphs 1b and 1c for exceptions and exemptions. In cases where more stringent explosives safety requirements are imposed by foreign countries in which U.S. forces are located, those requirements of the host country must be met only if an appropriate international agreement makes compliance with the host country's requirements mandatory. (R) (A)

b. These standards do not apply to the following situations or units:

(1) The transfer of full shipboard allowances at ordnance facilities, which will be governed by the standards of references (a) and (b).

(2) Ammunition cargo ships (AE, AOE, AOR, and AO-51 classes), which will be governed by reference (b) and enclosure (3) to reference (c).

c. The following situations or conditions are exempt from the application of ESQD requirements related to these standards:

(1) Ammunition and/or explosives stored in a ship's magazines (see definition in paragraph 2c) which are to be used solely in support of the ship's mission by installed shipboard weapons systems or by shipboard aircraft.

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(2) Ammunition handling listed under subparagraphs 2a(2), 2a(3), and 2a(4) of this enclosure, however these evolutions must be coordinated with other evolutions which might hazard non-nuclear ordnance, as is discussed in paragraph 8 and Appendix A.

## 2. Definitions

a. Ammunition handling is the movement of ammunition to, from, or within a ship while in port. It includes one or more of the following evolutions:

(1) Logistic movement - the transfer of ammunition to or from a ship at an authorized handling point. Transfer may be to or from the pier, a vehicle, a small boat, another ship, or other approved transport.

(2) Strike up/strike down - any movement of ammunition into or out of the normal stowage locations or magazines of the ship. It may also be part of a logistic movement or part of a maintenance movement.

(3) Maintenance movement - any movement of ammunition from its normal shipboard location to another location in order to conduct required assembly, disassembly, maintenance, or test of a weapons system, or maintenance of a stowage area. A maintenance movement may include strike up/strike down, movement within the normal stowage area, or movement from one stowage area to another. (See also paragraph 7.) Maintenance movements include, but are not limited to:

(a) Withdrawal from the fully stowed position and the return of Anti-Submarine Rockets (ASROC) to conduct Missile Electrical System Test (MEST) or receipt inspection.

(b) Removal of torpedoes or missiles from torpedo tubes or launcher stowage cells for planned maintenance (PMS) of the tubes, cells, or weapons.

(c) Movement of ammunition from ready stowage locations in gun mount handling rooms while conducting maintenance in the area.

(d) Movement of ammunition to test or repair magazine sprinkler systems or other protective devices.

(e) Movement of ammunition for installation or check-out of modifications to weapons stowage areas, or to handling, launching, or direction systems.

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(f) Movement of all-up weapons for disassembly, or movement of the explosive components of weapons for combining into a higher state of assembly.

(4) Maintenance of weapons in tenders (AD/AS) - the receipt, issue, handling, assembly, disassembly, repair, maintenance, overhaul, or test of weapons or weapons components conducted in an authorized weapons shop of a tender.

b. Handling location or area is the designated location on a pier or wharf, or at a buoy, where explosives are allowed to be transferred between two ships or a ship and vehicle or other transport, or the point alongside where the transfer between pier and boat or ship and boat is conducted. Also included are those anchorages designated as explosives anchorages where ammunition transfers may occur.

c. Magazine, as used in this instruction for shipboard applications, applies only to the specific spaces which are designated for the stowage of ordnance and are equipped with required detection, protection, and security devices and systems. Requirements for such devices/systems are contained in Navy general shipbuilding specifications. For applications applying to amphibious warfare ships, see Chapter 3 of reference (b) and enclosure (4) to reference (c). (R)

d. The classes of explosives, listed from the most hazardous to the least hazardous, are:

(1) Class 1.1 -- High explosives, mass detonating. Produces fragments.

(2) Class 1.2 -- High explosives, non-mass detonating. This class also contains a category number (04, 08, 12, or 18) which indicates the minimum ESQD arc required for fragment protection. This distance can be obtained by multiplying the category number by 100 feet.

(3) Class 1.3 -- Mass fire. Primarily propellants and pyrotechnics.

(4) Class 1.4 -- Mass fire, no blast. Primarily small arms.

e. Net explosive weight (NEW) is that weight of explosive and/or other energetic material which is used in the determination and application of explosive limits and ESQD arcs. NEW is computed by

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- R) taking the full weight of all high explosives (HE) present in Class 1.1 or 1.2 munitions, plus the appropriate TNT equivalence factor found in Table 5-3C of reference (a) times the weight of any propellant and other energetic material present in the Class 1.1 or 1.2 munitions. Black powder is to be treated as HE. For the handling or storage of more than one class of munitions simultaneously, the following apply:

(1) If Classes 1.1 and 1.2 munitions are handled simultaneously or stored together, the total NEW for both classes must first be considered as Class 1.1 munitions and then as Class 1.2 munitions to determine the required separation distance. The larger of the two separation distance must be used.

(2) If Class 1.1 munitions are handled simultaneously or stored with Class 1.3 munitions, the full weight of the Class 1.3 munitions must be included with the weight of the Class 1.1 munitions and separation distances for Class 1.1 munitions used.

(3) When Classes 1.2 and 1.3 munitions (or Class 1.4 munitions and any other class of munitions) are handled simultaneously or stored together, each class is to be considered separately for NEW/ESQD determination. The quantities of explosives for each class do not need to be added together.

When Class 1.3 munitions are handled or stored separately, the full weight of all energetic materials and propellants in the Class 1.3 munitions must be used. Where Class 1.4 munitions are handled or stored with no other explosives/energetic materials present, no explosive limit is normally required. Explosive weights for all munitions are found in reference (d).

f. Explosive limit is the total amount of explosive material authorized to be present at any time on or alongside the pier, ship, or boat/service craft at an authorized handling point or location, and outside the skin of the ship. Explosive limits are based on net explosive weight (see paragraph 2e).

g. Essential personnel are defined as follows:

(1) Those personnel whose duties require them to remain within an ESQD arc for one or more of the following reasons:

(a) Direct involvement in an ammunition handling evolution.

(b) Normal in port shipkeeping duties by assigned military personnel.

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(c) Provision of mission-required in port services.

(d) Provision of mission-related repairs and/or tests to in port ships.

(2) "Essential personnel" does not include vendors, commercial delivery vehicles (unless carrying mission-related materials), dependents, or non-DOD personnel except as categorized above.

h. A deviation is a departure from an established explosives safety rule or standard. For explosives safety applications, a deviation authorized by the Chief of Naval Operations (CNO) is considered to be a departure from DOD criteria, but under strictly controlled and regulated conditions based upon compelling operational need. Deviations which may be authorized by appropriate authority within the naval service are as follows (see reference (e) and subparagraph 7a(7) of enclosure (1) to reference (c) for details):

(1) Event waivers - deviations approved on a case basis for a particular evolution, issued for a limited period to meet a specific, non-recurring, readiness or operational requirement which cannot otherwise be satisfied. (R)

(2) Waivers - deviations from mandatory explosives safety requirements approved for the purpose of temporary satisfaction of recurring readiness or operational requirements, issued pending the completion of corrective measures to eliminate the requirement for waiver. Waivers are generally issued for a maximum of 2 years.

(3) Exemptions - deviations from mandatory explosives safety requirements approved for the purpose of long term satisfaction of recurring readiness or operational requirements. Except in certain cases where authorization to purchase real estate for sufficient ESQD clearances has not been granted, where it is in the best interest of the United States to grant agricultural leases of encumbered land, or where significant impairment of the defense posture of the United States would result, a positive program for eventual correction of the deficiency must be planned and in the process of being carried out. Exemptions are generally issued for a maximum of 5 years, but will not be granted for a period in excess of that estimated for correction of the deficiency. (R)

i. Ordnance facility - an activity which is intended to be used for the majority of large quantity ammunition transfers to and from naval ships (particularly fleet ammunition cargo ships).



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For the purpose of this instruction, the following are considered as ordnance facilities:

(1) Naval Weapons Stations Earle, Yorktown, Charleston, Seal Beach, and Concord.

(2) Naval Magazines Lualualei, Guam, and Subic Bay; Naval Station Rota Detachment, Cartagena.

(3) Naval Stations Rota and Roosevelt Roads (Vieques Annex).

R) (4) NATO Ammunition Depot, Augusta Bay; Naval Support Activity, Souda Bay.

(5) Indian Island Annex of Naval Undersea Warfare Engineering Station, Keyport, WA.

(6) Fleet Activities, Sasebo.

R) j. Fleet Ballistic Missile submarine site - an activity whose primary purpose is to provide support, including the handling of missiles, to FBM submarines (SSBN). For the purpose of this instruction, the following are considered as FBM sites:

(1) Refit Site ONE, Holy Loch, Scotland.

(2) Refit Site FOUR, Charleston, SC.

(3) Submarine Base, Kings Bay, GA.

(4) Submarine Base, Bangor, WA.

R) 3. Basic objective. The objective of the application of these standards is to provide safety guidelines for logistic support involving ordnance and explosives which are required on board ships in order to achieve mission effectiveness. This objective is based on the fact that the primary reason for the existence of a naval vessel is the accomplishment of its mission to support the national preparedness policy of the United States. The major responsibilities of a ship's Commanding Officer and personnel at all levels of naval logistic support are for the preparation of that ship to deliver fully according to its provided capabilities, and for the continued maintenance of those capabilities at the highest attainable mission readiness level.

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These standards are intended to achieve the best possible balance between mission accomplishment and proper explosives safety, within existing fiscal constraints.

#### 4. Policy

a. The loading or offloading of full shipboard ammunition allowances and the loading or offloading of cargo ammunition will be accomplished only at authorized ordnance facilities, at explosives anchorages, or at locations specifically approved by CNO.

b. Berthing of amphibious warfare (AW) ships with Landing Force Operational Readiness Materiel (LFORM) ammunition allowances on board is governed by the provisions of enclosure (4) to reference (c).

c. Destroyer tenders (AD) and submarine tenders (AS) will normally be berthed only in ports and at berths specifically authorized by CNO. For more details, see subparagraph 9a.

d. Berthing of any other type or class of naval ship not specifically set forth in paragraphs 4b and 4c (less AE, AOE, AOR, and AO-51 classes) may be accomplished without restriction as to location of berth, insofar as these standards are concerned.

e. The handling of ammunition in port (other than at ordnance facilities) will be permitted in those specific locations authorized by CNO, and under the conditions and requirements established in order to assure the presence of a proper explosives safety environment during such handling. There will be no variation from CNO-established explosive limits or other requirements (except that more stringent criteria may be applied) without prior authority or waiver from CNO (Op-41). (See reference (e) for details concerning waivers.) Adequate measures will be taken to control personnel and vehicular traffic in the area of a logistic movement. Nonessential personnel will not be permitted to enter the ESQD arc associated with the handling operation.

f. When fleet ballistic missiles are handled, the total quantity of all explosives present in any submarines (and tenders, if present) not separated by above-ground intermagazine distance (K = 11) must be considered for ESQD purposes. (A

g. For Naval Reserve ships homeported in non-Navy locations where ammunition handling has not been authorized, strike up/strike (R

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A) down and maintenance movements may be performed based on written authorization from CNO (Op-41). A request for such authorization should be submitted via the chain of command. The request will include a specific description of the berth location plotted on an appropriate map or chart. Requests for logistic movement of ammunition must be submitted in accordance with reference (e).

h. The planning for construction of, or major modification to, facilities at any Naval Station or activity covered by this instruction shall take into account the presence of any ESQD arc which may encumber the potential site. Site planning will, wherever feasible, ensure the removal of ESQD encumbrance from structures and functions on shore. If this is not possible, and where feasible within fiscal constraints and functionally acceptable, the hardening of structures inside ESQD arcs will be accomplished to withstand explosive over-pressures which may be generated by the quantities of explosives involved. Where a handling arc will exist, hardening must consider not only the over-pressure generated by the specific maximum amount of explosives which may be involved, but also resistance to low-angle, high-velocity fragments.

i. Servicing of explosives handling locations will be accomplished by those transportation modes approved by CNO, based on the recommendations of the CNO-sponsored AMHAZ Board for that area. While no ESQD considerations will apply along a transportation route between a storage site and the loading or offloading location, commands will select routes which minimize potential exposure of personnel and/or property, and will arrange adequate security for each shipment while in transit.

j. Specific criteria and standards are detailed herein. Where these do not provide for meeting the objective of paragraph 3 during Defense Conditions (DEFCON) 5 and 4, it is the responsibility of each command involved to bring such matters to the attention of CNO, via the chain of command, as quickly as possible.

R) k. These standards are applicable under all DEFCONs as defined in reference (f). Whenever DEFCON 3 or 2 is established, the maximum NEW normally authorized may be increased by the Fleet Commander in Chief (FLTCINC) as a temporary measure in order to provide for expeditious handling of ordnance required to meet the contingency plan in effect. The CNO (Op-41) shall be informed by letter of these variations and their expected duration.

5. Explosive limits for authorized handling locations

a. The Chief of Naval Operations will establish authorization to handle explosives at specified sites by waiver, exemption, or specific authority to handle. Included in each authorization will be an explosive limit (expressed in NEW) for each authorized handling pier, berth, point, or location based on the hazard class/division of explosives being handled. Only those explosives actually being handled outside of the skin of the ship (except for fleet ballistic missiles -- see paragraph 4f) will be applied toward the explosive limit. The maximum NEW established as the explosive limit for the handling location will determine the size of the resulting ESQD arc, which will apply only to land, pier, and wharf facilities, and not to other ships. (R)

b. The grouping of incompatible munitions at an authorized handling location will be avoided, even though the whole quantity of explosives involved may be within the authorized handling limit. (Refer to the compatibility tables in reference (d).)

6. Measurement of minimum separation distances between ammunition handling locations and other facilities

a. The measurement of minimum ESQD distances to be applied for ammunition handling evolutions will be from the authorized handling point on the pier or wharf where the explosives are transferred between the ship and a vehicle or other means of transport, from the point alongside where the transfer between the ship (or pier) and a boat or other ship is made, or from a designated explosives anchorage where an ammunition transfer takes place. In those cases where an arbitrary limitation has been placed on pier handling (e.g., no nearer the shore than the longitudinal midpoint of the pier), the measurement is made from the point of limitation. Where no limiting point has been placed on a pier, and where the nearest (to land) point of ammunition handling is subject to change and is not fixed, the handling arc measurement will be made from the pier bulkhead line. For arcs extending into channels, the measurement will be made from the end of the pier unless a seaward limiting point has been applied, in which case the limiting point shall be used.

b. Where authorized, ammunition may be handled simultaneously at more than one handling point or berth of the same pier provided:

(1) The total pier explosive limit is not exceeded at any time, unless limits have been established for the individual

berths or handling points, in which case those limits will not be exceeded.

(2) Individual handling evolutions are separated from each other by the unbarricaded intra-line distance requirements of Table 5-8 of reference (a), using the highest NEW of explosives present at any single transfer or handling point involved to establish the separation distance.

c. For tender (AD/AS) applications of separation distance, see paragraph 9c and Appendixes B and C.

R) 7. Special requirements applicable to ordnance movements incident to maintenance or systems operability tests. Individual weapons are authorized to be withdrawn wholly or partially from their launching devices or disconnected from the launcher electrically for authorized systems tests. Such operations in port shall be conducted with all due regard for control of conditions applicable to the handling of ammunition, and in accordance with Senior Officer Present Afloat (SOPA) requirements. As specified in current directives, emissions control (EMCON) will be instituted and the passage or access of non-essential personnel on board ship shall be prohibited.

8. Explosives operations vs. other hazardous operations. Specific requirements to be observed for the handling of ammunition and other hazardous materials simultaneously, or for the conduct of ammunition handling operations while fueling, conducting hot work, etc., are as follows (also refer to Appendix A):

a. No fueling (or defueling) operations shall be conducted at the same pier or at anchorage simultaneously with ammunition handling for logistic support (subparagraph 2a(1)). Simultaneous operations are permitted for other ammunition handling, subject to the requirements stated in paragraph 8b. (Also see paragraph 8c.)

b. Gasoline, either in bulk or drums; oxygen; compressed flammable gases; or any other highly hazardous material shall not be handled simultaneously at the same pier, in the same slip, or at anchorage with ammunition handling as defined in subparagraphs 2a(1), 2a(2), or 2a(3).

c. The transfer of sludge or other oily waste to a tank truck on the pier (or to a "donut") shall be considered in the same

category as a fueling operation. Where the availability of pier connections permit the discharge of such residues directly into a pier/shore collection system, no restrictions on simultaneous discharge and ammunition handling are required.

d. Rules concerning hot work and ammunition handling are as follows:

(1) No hot work shall be performed at or alongside an authorized ammunition handling location simultaneously while ammunition handling as defined in subparagraphs 2a(1), 2a(2), or 2a(3) is being conducted at the same berth, unless such hot work is in a tender and confined to those tender shops listed in subparagraph 9d(5)(a).

(2) Hot work at other berths of the same pier or slip may be performed subject to the following restrictions, and those of paragraph 8e:

(a) Exposed hot work (that outside the skin of a ship) shall be performed at least 500 feet (150 meters) from any ammunition handling as defined in subparagraphs 2a(1), 2a(2), or 2a(3) (except an internal maintenance movement), and also a minimum of 500 feet (150 meters) from any exposed ammunition.

(b) Hot work inside the skin of a ship (not exposed) may be performed at any berth other than the berth at which ammunition is being handled.

(3) In those cases where ships/submarines are nested alongside a tender, the rules in paragraph 8d(1) apply, except that internal hot work may be conducted on vessels on one side of the nest simultaneously with ammunition handling on the other side of the nest.

e. All scheduled evolutions involving hazardous materials, and all those involving hot work at, on, or alongside a Naval Station or other naval activity pier shall, before initiation, be reported to and cleared by the organization designated by the Naval Station (or activity) Commanding Officer for the coordination and/or supervision of waterfront hazardous operations.

f. See subparagraph 9d(5) for special exceptions for tenders.

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R) 9. Specific tender (AD/AS) applications. In addition to the foregoing standards, the following will also apply specifically to destroyer tenders (AD) and submarine tenders (AS):

a. The berthing of AD/AS class ships will be in accordance with the following:

(1) Normally, AD/AS will be berthed only in ports and at berths specifically authorized by CNO.

(2) When berthing is required at other locations, the ESQD criteria for the amount of cargo ammunition being carried must be met, as well as all local explosives safety criteria when berthed overseas, if the host nation's criteria are more stringent than U.S. standards. If this is not possible, a waiver request must be submitted to the operational commander in accordance with paragraph 7a or 7c of reference (e), with certification of operational necessity to be provided by the operational commander and concurrence provided by the FLTCINC.

(3) Where appropriate to the separation to be maintained between tenders in order to meet ESQD requirements, and where permitted by such considerations as pier strength, slip width, and the location of utilities, tenders will be berthed only at the seaward end of piers.

If the tender is carrying no cargo ammunition, the above restrictions on berthing are not applicable.

R) b. The maximum NEW of explosives authorized on board a tender in port under DEFCON 5 is 30,000 pounds for an AD and 60,000 pounds for an AS (except those ASS which are supporting FBM submarine sites), unless another limit has been assigned. This amount may be increased as desired by the FLTCINC if the tender is departing for sea within 96 hours, or, if prior CNO authorization has been obtained, for other operational requirements.

c. The measurement of the minimum required separation distances for tenders and other "targets" will be as follows:

(1) Between tenders, the minimum separation distance shall be based on a factor of  $K = 11$  when both tenders are located at "old" (or "existing") piers, and on a factor of  $K = 18$  when one or both tenders are at "new" piers. For the purpose of this instruction, "new" piers are defined as all piers which became operational on or after 1 January 1975, "old" piers are all other piers not classed as "new" piers. The measurement for

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separation distance is made from the closest bulkhead of the major weapons magazine area on one tender to the like bulkhead on the other tender. Refer to the diagram of Appendix B and to Appendix C for more detailed information.

(2) Between tenders and the station boundary, public highways or waterways, or inhabited buildings, measurement for minimum separation distance is made from the bulkhead of the tender weapons magazine area nearest the "target".

d. Ammunition handling on board tenders will be conducted in accordance with the following guidance:

(1) Tenders are authorized to perform maintenance of weaponry defined in subparagraph 2a(4) subject to the following restriction (which is not applicable to those tenders which are supporting FBM submarines sites): Unless specifically authorized by CNO in DEFCON 5, under increased DEFCON, or departing for sea in 24 hours, the number of explosive warheads or warshot-configured torpedoes or cruise missiles in any workshop shall be limited to the exact number of operational maintenance lines in that workshop. Type Commanders shall define maintenance lines as they apply to the tenders under their cognizance and shall direct tender commanding officers to establish in writing the number and location of maintenance lines in each weapons shop. The number of maintenance lines in each shop shall be based upon the amount of usable floor space and the number of personnel available to perform simultaneous operations on multiple weapons.

(2) There shall be no stowage of explosive warheads, warshot-configured torpedoes or cruise missiles, or high explosive components in the maintenance workshop or in an immediately adjacent space on the same deck.

(3) Except for those tenders which are supporting FBM submarine sites, over-the-side receipts and issues of explosives, weapons, or components shall be governed by all explosive limits established for the pier (or anchorage) as a whole or for the individual handling points approved thereon. Handling shall be phased and controlled to insure that the authorized NEW is not exceeded.

(4) Ammunition handled on all tenders must be limited to that issued to, or received from, only one supported ship or activity at a time.



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(5) All tenders are authorized to perform their normal functions simultaneously with the handling of ammunition subject to the following restrictions (see also Appendix A):

(a) Welding and other hot work may be conducted within spaces specifically designated in writing by the Commanding Officer simultaneously with weapons handling providing the handling route does not traverse such spaces or any compartment immediately adjacent thereto on the same deck.

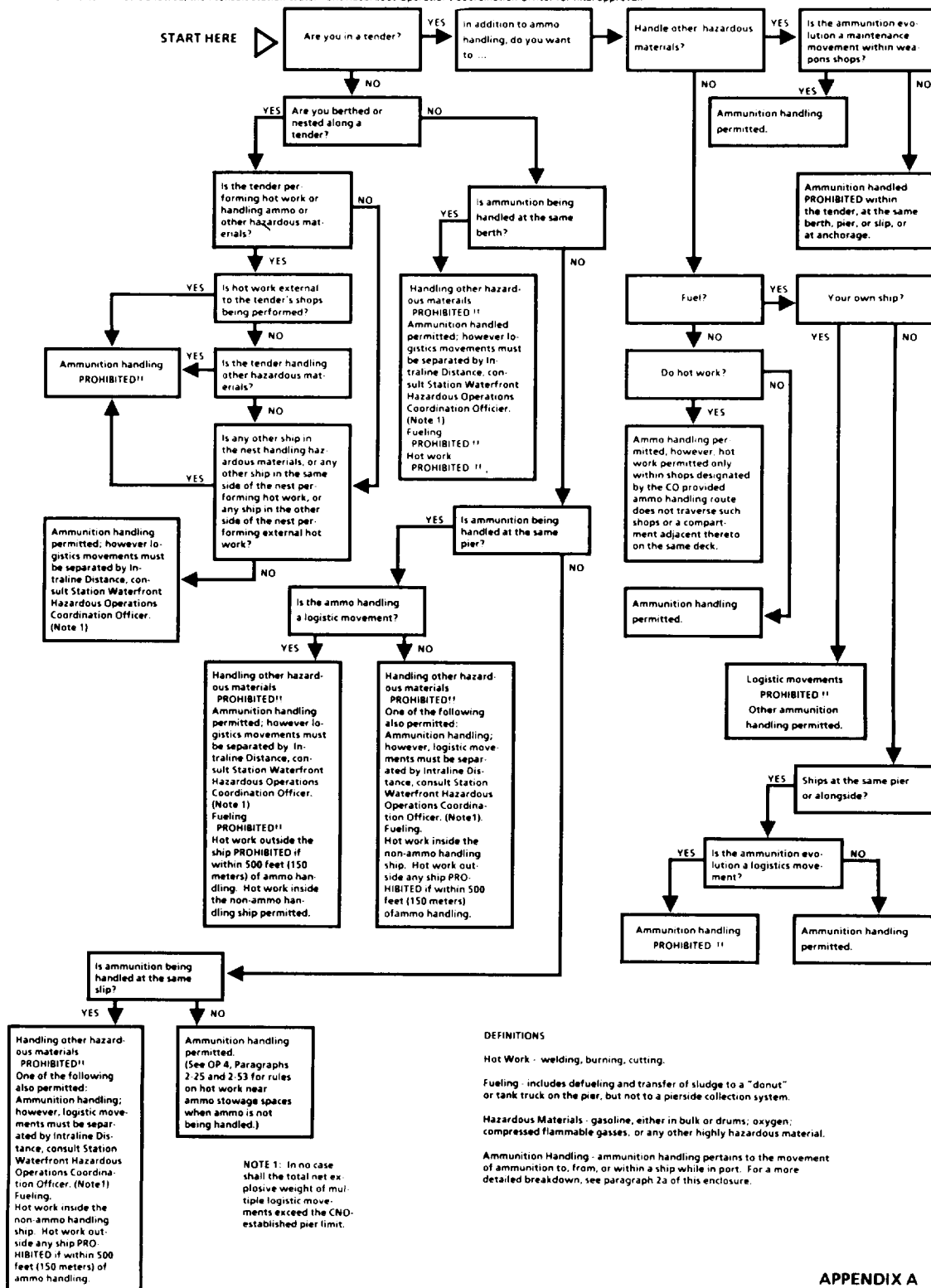
(b) Ammunition handling, except for maintenance movements in weapons shops, is not permitted simultaneously with the handling of those materials listed in paragraph 8b on the same pier, in the same slip, or at anchorage with the tender.

(c) Fueling of ships alongside and simultaneous ammunition handling within the tender for the categories listed in subparagraphs 2a(2), 2a(3), and 2a(4) (but not 2a(1)) are permitted.

Depending on the circumstances, ammunition handling cannot always be performed simultaneously with

- a). Handling of other hazardous materials,
- b). Fueling, or
- c). Hot work.

Use this chart to ascertain what is allowed, then consult Station Waterfront Hazardous Operations Coordination Officer for final approval.



## DEFINITIONS

**Hot Work - welding, burning, cutting.**

**Fueling** - includes defueling and transfer of sludge to a "donut" or tank truck on the pier, but not to a pierside collection system

**Hazardous Materials** - gasoline, either in bulk or drums; oxygen; compressed flammable gases, or any other highly hazardous material.

**Ammunition Handling** - ammunition handling pertains to the movement of ammunition to, from, or within a ship while in port. For a more detailed breakdown, see paragraph 2a of this enclosure.



SUMMARY OF ESQD REQUIREMENTS

The following distance requirements must exist between explosive concentrations, sources, or handling points, and the nearest "target". (Also refer to Appendix B.)

<u>Source</u>	<u>"Target"</u>	<u>"K" Factor (Notes 1, 2)</u>	<u>Applicable Distance (ft) (Notes 1, 3)</u>
Combatant	Any	NR	NR
AD or AS	Combatant: alongside, forward, or aft	NR	NR
AD	Inhabited building or station boundary	40	1250
AS	Inhabited building or station boundary	40	1565
AD	Public highway or waterway	24	750
AS	Public highway or waterway	24	940
AD	AS (Both at Old piers)	11	430
AD	AS (One or both at New piers)	18	700
AD	AD (Both at Old piers)	11	340
AD	AD (One or both at New piers)	18	560
AS	AS (Both at Old piers)	11	430
AS	AS (One or both at New piers)	18	700

(continued)

<u>Source</u>	<u>"Target"</u>	<u>"K" Factor (Notes 1, 2)</u>	<u>Applicable Distance (ft) (Notes 1, 3)</u>
On-pier handling point:	- AD	NR	NR
	- AS	NR	NR
	- Combatant	NR	NR
	- Inhabited building or station boundary	40	1250 *
	- Public highway or waterway	24	750 *
	- Another on-pier handling point	18	210

Notes: (1) NR indicates a separation distance is not required.

(2) "K" factor is used in the following formula:

$$\text{Distance} = KW^{1/3}$$

Where W = NEW in pounds of Class 1.1 ammunition present.

(3) Distances are based on 30,000 pounds NEW for an AD, 60,000 pounds NEW for an AS, and 1500 pounds NEW for on-pier handling points (nominal values). (These distances do not apply to tenders which are supporting FBM submarine sites.)

Actual distances will vary depending on the actual NEW allowed. Use the formula presented in Note 2 with the proper "K" factor and NEW of explosives present to determine the required distance.

A)

\* A minimum separation distance of 1250 feet for inhabited buildings and 750 feet for public highways/waterways is required.